

2024
FYUGP 2nd Semester Examination
MATHEMATICS
(Skill Enhancement Course)
Paper : SEC0206803
Paper Name : L^AT_EX

Total Marks: 45

Time: 1½ hours

1. Answer the following questions: 1 x 5 = 5
- a) What is L^AT_EX ?
 - b) What are the L^AT_EX commands for γ and Δ ?
 - c) Write the L^AT_EX command for $A \subseteq B$.
 - d) What is beamer?
 - e) What is PSTricks?
2. Answer any five of the following questions : 2 x 5 = 10
- a) Describe briefly the use of enumerate environment.
 - b) What is wrong in the following input? What is the right way to do it ?
If $\$theta = pi\$$, then $\$sin theta = 0\$$.
 - c) Typest the following sentence

The area of triangle with side lengths a, b, c is given by *Heron's formula*:

$$A = \sqrt{s(s-a)(s-b)(s-c)}$$

where s is the semiperimeter $(a + b + c)/2$.
 - d) What are delimiters? What commands produce the large delimiters?
 - e) What do the following commands do inside a document?
 $\backslash begin \{pspicture\} (5, 5)$
 $\backslash end \{pspicture\}$

P.T.O

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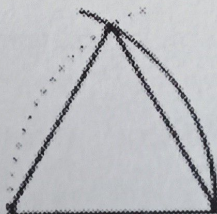
- f) Write each of these postfix expressions in standard form:
 $x \ 1 \ \text{add} \ 2 \ \text{exp}$ and $x \ x \ \text{sin} \ \text{mul}$
- g) Write the use of the following commands :
 $\backslash\text{pscircle}$, $\backslash\text{psclip}$
- h) What are the roles of the following commands in a beamer class document?
 $\backslash\text{begin}\{\text{frame}\}$
 $\backslash\text{titlepage}$
 $\backslash\text{end}\{\text{frame}\}$
- i) Write a simple $\text{\LaTeX}$ program to create a document containing a 3×3 matrix.
- j) Write a difference between the environments eqnarray and eqnarray* .
3. Answer **any three** of the following questions : $5 \times 3 = 15$
- a) Write the $\text{\LaTeX}$ command for the following :

$$1 + 2 = 3$$

$$4 + 5 + 6 = 7 + 8$$

$$\begin{aligned} f(x) &= \frac{x^2 + 2x + 1}{4} \\ &= \left(\frac{x+1}{2}\right)^2 \end{aligned}$$

- b) Write the commands for the following output :

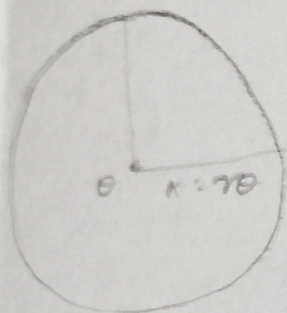


- c) Write a simple program in $\text{\LaTeX}$ to create a presentation containing the title slide and a second slide containing a PSTricks picture of a square.

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- d) Plot $y = \sin x$ and $y = \cos x$ on the same coordinate system for $0 \leq x \leq 2\pi$. Show that the sine function as a solid curve and the cosine function as a dotted curve.
- e) Write the output of the following code :

```
\begin{pspicture}(4,4)
\pscircle(2,2){1.5}
\pswedge[fillstyle=solid,
fillcolor=lightgray](2,2){1.5}{0}{60}
\put(2.75,1.7){\theta}
\put(2.3,2.1){\theta}
\put(3.25,3){\theta}
\end{pspicture}
```



- f) Write the L^AT_EX commands for the following output :

$$e^x = \frac{x^0}{0!} + \frac{x^1}{1!} + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots, \quad (1)$$

$$\sin 90^\circ + \cos 90^\circ = 1,$$

$$\int_0^\infty x \, dx \quad \text{is divergent.} \quad (2)$$

—X—

$$e^{\{x\}} = k$$

$$70^\circ \leq 90^\circ \text{ (circ)}$$

$$f(1(x))$$

$$90^\circ \leq$$

$$90^\circ \text{ circ}$$

$$\text{int} \{ \{ \} \}$$